

### REMARKS

The following remarks are being submitted as a supplemental response to the response filed on July 12, 2004 to the Office Action dated January 13, 2004. In view of the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

#### Declaration Under 37 C.F.R. §1.132

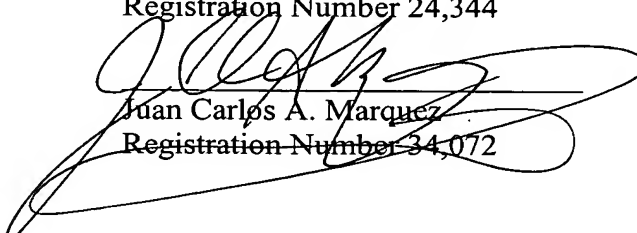
A Declaration of One Skilled in the Art under 37 C.F.R. §1.132 is submitted herewith to support the recitation of "one or more living organisms" and the "unexpected results" described in the response.

#### Conclusion

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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SPF/JCM/JT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application

GOJOBORI *et al.*

Application 10/088,550

Filed: March 13, 2002

For: METHOD, SYSTEM, AND PROGRAMS FOR  
USE IN DISPLAYING EXPRESSION  
PHENOMENON IN LIVING MATTERS

Attorney Docket No. HIRA-0048

Honorable Assistant Commissioner  
for Patents  
Washington, D.C. 20231

Art Unit 1631

Examiner  
Kenedy, Andrew A.

DECLARATION OF ONE SKILLED IN THE ART  
UNDER 37 C.F.R. §1.132

Sir:

I, Dr. Takashi Gojobori, an expert in the field of the invention claimed in the above identified application. I am at least of ordinary skill in the art of hybridization devices, that is the subject of this application, am a co-inventor with respect to the subject matter disclosed and hereby declare as follows:

I received my BS degree at Kyushu University in the field of population genetics. I have worked in the field of molecular evolution and bioinformatics for at least 30 years.

I have reviewed the above-referenced patent application and carefully considered the Examiner's rejection to the specification. It is my opinion that the recitation of "living matter" is fully supported and would be understood by one skilled in the art in view of the recitations in the specification of "one or more living organisms". The invention was design to accomplish the following unexpected results via the different embodiments recited in the pending claims.

Claim 3 recites a method capable of three-dimensionally capturing not only embryogenesis, which is an inherent biological phenomenon, but also changes in response to external stimulation. The external stimulation includes thermal change, environment composition change, addition of inorganic or organic chemical materials from outside, electrical

stimulation, and the like. The gene expression data is stored in a database indicated in the present invention as experimental data concerning a living body. This shows a unique feature of the present invention that the result of a planned experiment on a life form, rather than natural phenomena, can be visualized. The three-dimensional visualization of explicit factors and biological reactions enables an unprecedentedly effective method for revealing a network system of gene expressions which is a key for clarifying basic biological phenomena in physiology, pathological causes, side effects of medication, and the like. In other words, by three-dimensionally observing the change in expression in response to external stimuli, it becomes possible to not only reveal a network of related genes, but also discover an alternate route of gene expression, for example, by altering the parameters. The invention thus enables very important information to be analyzed.

Claim 5 recites a method enabling the display of not only the embryogenesis of a single type of living matter, but also a comparative display of the gene expressions of a plurality of living matters three dimensionally. This makes it possible to display and analyze what adaptations occur among gene networks through the process of evolution, and a difference in which gene network of gene groups is responsible for the difference that leads to a species-specific branching. Also, as compared with a method for visualizing the embryogenesis of a single species, the invention makes it possible to clarify a specialized role of a gene function in ontogenesis in higher dimensions by comparing the information being expressed in each organ. The method for visualizing three-dimensional differences among multiple species makes it possible to prove relationships between evolution and expression, so that functions of individual genes and their relations can be speedily discovered without conducting experiments that could be expensive or that might involve ethical problems.

Claims 6-7 recite novel methods for effectively displaying the expression of a specified gene in a three-dimensional manner using three primary colors. This enables a dynamic display of the relationships among multiple genes, which has been impossible by the method of merely displaying a change in a single gene in terms of embryogenesis in chronological order. Thus, the sequence of events wherein an increase of expression of a certain gene brings about an increase or decrease of expression of another gene, which affects other factors, and so on, can be visualized. This is a very effective method as it also backs up the effects of claims 3 and 5.

Claim 14 recites a method visualizing networks among genes that are expressed with locations on the chromosome from which the genes are derived, thereby making it possible to discover

information that can contribute to the clarification of expression controlling mechanisms. The method enables visualizing how information about the frequency of actual expression varies on the chromosomes from which the genes are derived. Also, the method enables visualizing the relationship of genetic sequences on a map simultaneously with the relationship of gene networks. Accordingly, it becomes possible to relate or predict three-dimensional expression information based upon the known information on a chromosome map, and further to efficiently narrow the candidate gene sequences to be visualized and clarified.

Based on the relevant contents of the original disclosure, we contend that no new matter is being introduced into the application through the submission of this response.

I hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine, or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-captioned application and any patent to issue thereon.

Respectfully submitted this 13th day of July 2004

  
(Name)